

## PATENTS

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File 350:Derwent WPIX 1963-2009/UD=200939

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File 347:JAPIO Dec 1976-2009/Jan(Updated 090503)

(c) 2009 JPO & JAPIO

? ds

Set	Items	Description
S1	56537	(INCOMING OR INWARD? ? OR INBOUND OR ENTER? OR INGOING OR ARRIV?)(5N)(FLUID? ? OR WATER OR LIQUID? ? OR COOL?NT? ? OR ETHYLENE()GLYCOL? ? OR ETHYLENEGLYCOL? ? OR ETHANEDIOL? ? OR ANTI()FREEZE? ? OR ANTIFREEZE? ? OR REFRIGER?NT? ?)
----LIMITALL S1----		
S2	8256	TEMPERATURE? ?
S3	2487	DEGREE OR DEGREES
S4	12714	AIR OR AIRS
S5	4549	(S4 OR GAS OR GASES)(3N)(LEADING OR DISCHARG? OR SUPPLY OR OUTGOING OR OUTLET? OR OUTWARD? ? OR OUTBOUND OR EXITING OR LEAVING OR LEAVE OR LEAVES OR LEFT OR (FLOW? ? OR FLOWED OR FLOWING OR GOING OR GO OR GOES OR WENT)() (OUT))
S6	267	S2()DIFFERENC?
S7	3100	S5(S)S1
S8	17	S6(S)S7
S9	737	S1(7N)S5
S10	66	S5(7N)(DIFFEREN? OR VARIANCE? ? OR SUBTRACT? OR DEDUCT? OR DEVIA?)
S11	12	S10(7N)S1
S12	11	S11 NOT S8
S13	649	S1(7N)(DIFFEREN? OR VARIANCE? ? OR SUBTRACT? OR DEDUCT? OR DEVIA?)
S14	10	S13(7N)S5
S15	0	S14 NOT (S11 OR S8)
S16	162	S9(7N)(S2 OR S3 OR COOL? OR COLD? OR HOT OR HEAT OR WARMTH OR HOTNESS OR FAHRENHEIT OR CELSIUS OR KELVIN)
S17	12718	(FLUID? ? OR WATER OR LIQUID? ? OR COOL?NT? ? OR ETHYLENE()GLYCOL? ? OR ETHYLENEGLYCOL? ? OR ENTHANEDIOL? ? OR ANTI()FREEZE? ? OR ANTIFREEZE? ? OR REFRIGER?NT? ?)(5N)(REGULAT? OR CONTROL? OR MODULAT? OR ADJUST? OR CHANG? OR ADAPT? OR MODIF? OR CALIBRAT? OR READJUST? OR READAPT? OR RECALIBRAT??? OR ALTER??? OR ALTERATION? OR VARY??? OR VARI?)
S18	43	(S10 OR S16)(S)S17
S19	38	S18 NOT (S14 OR S11 OR S8)
S20	37	S10 NOT (S18 OR S14 OR S11 OR S8)
S21	129	S16 NOT (S10 OR S18 OR S14 OR S11 OR S8)

? log off

**Dialog eLink:** Order File History

8/25,K/6 (Item 6 from file: 350)

DIALOG(R)File 350: Derwent WPIX

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0015249197 *Drawing available*

WPI Acc no: 2005-599283/200562

XRPX Acc No: N2005-491650

**Method for automatically adjusting flow rate engine coolant in vehicle e.g. car, involves increasing flow rate of coolant to higher rate based on temperature of coolant before entering heater core and temperature of air within core**

Patent Assignee: NISSAN TECH CENT NORTH AMERICA INC (NISS-N)

^Inventor: EISENHOUR R S

Patent Family ( 8 patents, 39 countries )				
Patent Number	Kind	Date	Update	Type
EP 1574370	A1	20050914	200562	B
JP 2005255160	A	20050922	200562	E
CN 1666896	A	20050914	200607	E
US 20060157576	A1	20060720	200648	E
EP 1574370	B1	20070307	200720	E
DE 602005000643	E	20070419	200729	E
DE 602005000643	T2	20071115	200777	E
CN 100368221	C	20080213	200846	E

Local Applications (no., kind, date): EP 2005251393 A 20050308; JP 200569331 A 20050311; CN 200510055005 A 20050311; US 2004797602 A 20040311; EP 2005251393 A 20050308; DE 602005000643 A 20050308; EP 2005251393 A 20050308; DE 602005000643 A 20050308; EP 2005251393 A 20050308; CN 200510055005 A 20050311

Priority Applications (no., kind, date): US 2004797602 A 20040311; EP 2005251393 A 20050308

### **Alerting Abstract EP A1**

NOVELTY - The temperature difference between the temperature of coolant at lower flow rate before entering a heater core and temperature of air within the heater core, is determined. The flow rate of the coolant is increased to higher rate if the determined temperature difference is greater than predetermined temperature difference.

DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

1. method for automatically controlling climate in climate in cabin of vehicle;
2. coolant flow control device;
3. vehicle; and
4. program product for automatically adjusting flow rate of engine coolant.

USE - For automatically adjusting flow rate of engine coolant in vehicle such as car, sports utility vehicle (SUV), minivan, station wagon, pick-up truck, etc.

ADVANTAGE - Provides better control of coolant flow through heater core and thus heater core is able to provide enough heated air to the cabin of vehicle so that the occupants in the cabin feel comfortable, even at extremely cold and low engine/pump speed conditions in a manner that provides for economical operation of vehicle in both short and/or long term.

DESCRIPTION OF DRAWINGS - The figure shows an algorithm for automatically adjusting flow rate of engine coolant.

Original Publication Data by AuthorityArgentina**Publication No. ...Claims:**a first flow rate before the coolant enters a heater core and a temperature of **air exiting** the heater core; andautomatically increasing the flow rate of the coolant to a second flow rate higher than the first flow rate if the **temperature difference** is greater than a first predetermined **temperature difference**.... ... a first flow rate before the coolant enters a heater core and a temperature of **air exiting** the heater core; andautomatically increasing the flow rate of the coolant to a second flow rate higher than the first flow rate if the **temperature difference** is greater than a first predetermined **temperature difference**.... ... a first flow rate before the coolant enters a heater core and a temperature of **air exiting** the heater core; andautomatically increasing the flow rate of the coolant to a second flow rate higher than the first flow rate if the **temperature difference** is greater than a first predetermined **temperature difference**.>

## BIBLIOGRAPHIC

### ? show files

File 2:INSPEC 1898-2009/Jun W2  
(c) 2009 The IET  
File 6:NTIS 1964-2009/Jun W4  
(c) 2009 NTIS, Intl Cpyrght All Rights Res  
File 8:Ei Compendex(R) 1884-2009/Jun W2  
(c) 2009 Elsevier Eng. Info. Inc.  
File 25:Weldasearch 1966-2009/Jun  
(c) 2009 TWI Ltd  
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(c) 2009 BLDSC all rts. reserv.  
File 81:MIRA - Motor Industry Research 2001-2009/May  
(c) 2009 MIRA Ltd.  
File 95:TEME-Technology & Management 1989-2009/May W5  
(c) 2009 FIZ TECHNIK  
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(c) 2009 Contains copyrighted material  
File 583:Gale Group Globalbase(TM) 1986-2002/Dec 13  
(c) 2002 Gale/Cengage  
File 23:CSA Technology Research Database 1963-2009/Jun  
(c) 2009 CSA.  
File 144:Pascal 1973-2009/Jun W3  
(c) 2009 INIST/CNRS

### ? ds

Set	Items	Description
S1	23624	(INCOMING OR INWARD? ? OR INBOUND OR ENTER? OR INGOING OR ARRIV?)(3N)(FLUID? ? OR WATER OR LIQUID? ? OR COOL?NT? ? OR ETHYLENE()GLYCOL? ? OR ETHYLENEGLYCOL? ? OR ENTHANEDIOL? ? OR ANTI()FREEZE? ? OR ANTIFREEZE? ?)
----LIMITALL S1----		
S2	4443	TEMPERATURE? ?
S3	1209	DEGREE? ?
S4	2729	AIR OR AIRS
S5	113	(S2 OR S3)()(DIFFERENCE)
S6	22	S5 AND S4 AND S1
S7	10	S6/2005:2009
S8	12	S6 NOT S7
S9	11	RD (unique items)
S10	430	(S4 OR GAS OR GASES)(3N)(LEADING OR DISCHARG? OR SUPPLY OR OUTGOING OR OUTLET? OR OUTWARD? ? OR OUTBOUND OR EXITING OR LEAVING OR LEAVE OR LEAVES OR LEFT OR (FLOW? ? OR FLOWED OR FLOWING OR GOING OR GO OR GOES OR WENT)()(OUT))

S11 9 S10(7N)(DIFFEREN? OR VARIANCE? ? OR SUBTRACT? OR  
 DEDUCT? OR DEVIA?)  
 S12 9 S11 AND S1  
 S13 8 S12 NOT S6  
 S14 5 RD (unique items)  
 S15 400 S1(7N)(DIFFEREN? OR VARIANCE? ? OR SUBTRACT? OR DEDUCT?  
 OR DEVIA?)  
 S16 5 S15 AND S10  
 S17 4 S16 NOT (S12 OR S6)  
 S18 2 RD (unique items)  
 S19 92 S1(7N)S10  
 S20 34 S19(7N)(S2 OR S3 OR COOL? OR COLD? OR HOT OR HEAT OR  
 WARM? OR HOTNESS OR FREEZ? OR FROZE OR CHILL? OR FAHRENHEIT OR CELS-  
 IUS OR KELVIN)  
 S21 30 S20 NOT (S16 OR S12 OR S6)  
 S22 6 S21/2005:2009  
 S23 24 S21 NOT S22  
 S24 15 RD (unique items)  
 S25 4696 (FLUID? ? OR WATER OR LIQUID? ? OR COOL?NT? ? OR  
 ETHYLENE()GLYCOL? ? OR ETHYLENEGLYCOL? ? OR ENTHANEDIOL? ? OR  
 ANTI()FREEZE? ? OR ANTIFREEZE? ?)(5N)(REGULAT? OR CONTROL? OR MODULAT?  
 OR ADJUST? OR CHANG? OR ADAPT? OR MODIF? OR CALIBRAT? OR READJUST? OR  
 READAPT? OR RECALIBRAT??? OR ALTER??? OR ALTERATION? OR VARY??? OR  
 VARI?)  
 S26 3324 S1(S)S25  
 S27 57 S26(S)S10  
 S28 46 S27 NOT (S20 OR S16 OR S12 OR S6)  
 S29 1 S28/2005:2009  
 S30 45 S28 NOT S29  
 S31 38 RD (unique items)

? log off

14/5/3 (Item 1 from file: 8)

DIALOG(R)File 8: Ei Compendex(R)

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0015772218 **E.I. COMPENDEX No:** 2004027808733

**Thermal control of heat exchangers**

**Issue Title:** Proceedings of the 2001 National Heat Transfer Conference Volume 2  
 Alotaibi, Sorour; Sen, Mihir; Goodwine, Bill; Yang, K.T.

**Corresp. Author/Affil:** Yang, K.T.: Hydronics Laboratory, Department of Aerospace  
 Engineering, University of Notre Dame, Notre Dame, IN 46556, United States

**Corresp. Author email:** kwang-tzu.yang.1@nd.edu

**Conference Title:** 2001 National Heat Transfer Conference (NHTC2001)

**Conference Location:** Anaheim, CA United States **Conference Date:** 20010610-  
 20010612

**Sponsor:** Heat Transfer Division, ASME; American Institue of Chemical Engineers  
 (AIChE); American Institute of Aeronautics and Astronautics (AIAA)

**E.I. Conference No.:** 62090

Proceedings of the National Heat Transfer Conference ( Proc. Natl. Heat Transf. Conf. )  
 ( United States ) 2001 2/- (1105-1115)

**Publication Date:** 20011201

**Publisher:** American Society of Mechanical Engineers

**ISBN:** 0791835332; 9780791835333

**Document Type:** Conference Paper; Conference Proceeding **Record Type:** Abstract

**Treatment:** T; (Theoretical)

**Language:** English **Summary Language:** English

**Number of References:** 25

The temperature control of a single-pass air-to-water cross flow heat exchanger is investigated numerically. A transient model of cross flow heat exchanger is developed by considering a transverse flow of air across a tube carrying water. The conservation laws were applied to three control volumes, and the transient conjugate forced convection heat transfer from the tube is treated numerically to find the **outlet air** and water temperatures, using finite **difference** approximations with an implicit formulation. The **outlet air** temperature is controlled under limiting conditions to prescribed values by regulating the **water** flow rate **entering** the heat exchanger. The controllability of the heat exchanger with and without disturbance due to step changes in the inlet air temperature, flow rate, and the set point are considered. Proportional-integral-derivative (PID) controls are used on the air flow for this purpose. The effects of the limiting-condition constraints and different control parameters are presented. The simulation results show that this control methodology is effective.

**Descriptors:** Differential equations; Frequency response; Reynolds number; Specific heat; Thermal diffusion; Thermal variables control; Transfer functions; Water tube boilers; \*Heat exchangers

**Identifiers:** Pecklet number; Proportional-integral-derivative (PID)

**Classification Codes:**

921.2 (Calculus)

731.3 (Specific Variables Control)

641.1 (Thermodynamics)

631.1 (Fluid Flow, General)

616.1 (Heat Exchange Equipment & Components)

614.2 (Steam Power Plant Equipment & Operation)

921 (Applied Mathematics)

**Dialog eLink:**

14/5/1 (Item 1 from file: 2)

DIALOG(R)File 2: INSPEC

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08273064

**Title:** Numerical simulation of the thermal control of heat exchangers

**Author(s):** Alotaibi, S.; Sen, M.; Goodwine, B.; Yang, K.T.

**Author Affiliation:** Dept. of Aerosp. & Mech. Eng., Notre Dame Univ., IN, USA

**Journal:** Numerical Heat Transfer, Part A (Applications) , vol.41 , no.3 , pp.229-44

**Publisher:** Taylor & Francis

**Country of Publication:** UK

**Publication Date:** 15 Feb. 2002

**ISSN:** 1040-7782

**SICI:** 1040-7782(20020215)41:3L;229:NSTC;1-N

**CODEN:** NUHTD6

**U.S. Copyright Clearance Center Code:** 1040-7782/02/\$12.00+.00

**Language:** English

**Document Type:** Journal Paper (JP)

**Treatment:** Theoretical or Mathematical (T); Experimental (X)

**Abstract:** The temperature control of outlet air by changing the water flow rate in a single-pass water-to-air cross-flow heat exchanger is investigated. The conservation laws are applied to finite control volumes and an implicit formulation is used for transient numerical solutions. Conjugate forced convection heat transfer from the tube is solved to calculate the temperatures of the air and water coming out of the heat exchanger. In the simulations the outlet air temperature is controlled by changing the **water** flow rate **entering** the heat exchanger using a proportional-integral (PI) controller. The range of controllability of the heat exchanger was studied first. Then disturbances in the form of step changes in the inlet air temperature, the airflow rate, and the set point temperature were separately introduced. The effects of the limiting-condition constraints and **different** control parameters on controlling the **outlet air** temperature are presented. The results show that the control behavior can be simulated numerically and that this control methodology is effective within limits ( 19 refs.)

**Subfile(s):** A (Physics); C (Computing & Control Engineering)

**Descriptors:** digital simulation; flow simulation; forced convection; heat exchangers; temperature control; two-term control

**Identifiers:** numerical simulation; thermal control; heat exchangers; temperature control; water flow rate; single-pass water-to-air cross-flow heat exchanger; conservation laws; finite control volumes; implicit formulation; transient numerical solutions; conjugate forced convection heat transfer; outlet air temperatures; water temperature; proportional-integral controller; controllability; step changes; inlet air temperature; airflow rate; set point temperature; limiting-condition constraints; control parameters; control methodology; compact heat exchangers

**Classification Codes:** A0720 (Thermal instruments and techniques); A8630R (Thermal energy conversion (heat engines and heat pumps)); A4710 (General fluid dynamics theory, simulation and other computational methods); A4725Q (Convection and heat transfer); A4425 (Heat convection); C3120N (Thermal variables control) ; C3340B (Control of heat systems)

**INSPEC Update Issue:** 2002-020

**Copyright:** 2002, IEE

24/5/14 (Item 7 from file: 23)

DIALOG(R)File 23: CSA Technology Research Database

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0009184350 IP Accession No: 200805-71-676299; 200805-61-724905; 2008656981;

A08-99-706047

**^Integrated paint spray booth and air conditioning system and process**

Johnson, Jeffrey; St Louis, Daniel M  
, USA

**Publisher Url:** <http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&u=/netaht ml/PTO/search-adv.htm&r=1&p=1&f=G&l=50&d=PTXT&S1=57 46650.PN.&OS=pn/5746650&RS=PN/5746650>

**Document Type:** Patent

**Record Type:** Abstract

**Language:** English

**File Segment:** Metadex; Mechanical & Transportation Engineering Abstracts; ANTE: Abstracts in New Technologies and Engineering; Aerospace & High Technology

**Abstract:**

An integrated paint spray booth and air conditioning system and process utilize a spray booth housing, scrubber and filtering chambers located below the housing, and an air conditioning apparatus including an adiabatic saturator. The components are arranged to direct the air flow in the system substantially transverse to the length of the system. The air is conditioned to predetermined psychrometric values by sensing only the **temperature** of the **water entering** the saturator and the **air exiting** the conditioning apparatus.

**Descriptors:** Air conditioning; Booths; Housing; Air conditioners; Paint spray; Filtering ; Scrubbers; Positioning; Filtration; Air flow; Adiabatic flow; Detection; Spraying

**Subj Catg:** 71, General and Nonclassified; 61, Design Principles; 99, General

## FULLTEXT

### ? show files

File 9:Business & Industry(R) Jul/1994-2009/Jun 24  
(c) 2009 Gale/Cengage  
File 16:Gale Group PROMT(R) 1990-2009/Jun 04  
(c) 2009 Gale/Cengage  
File 160:Gale Group PROMT(R) 1972-1989  
(c) 1999 The Gale Group  
File 148:Gale Group Trade & Industry DB 1976-2009/Jun 11  
(c) 2009 Gale/Cengage  
File 621:Gale Group New Prod.Annou.(R) 1985-2009/May 21  
(c) 2009 Gale/Cengage  
File 47:Gale Group Magazine DB(TM) 1959-2009/Jun 16  
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(c) 2009 ProQuest Info&Learning  
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File 636:Gale Group Newsletter DB(TM) 1987-2009/Jun 04  
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File 264:DIALOG Defense Newsletters 1989-2009/Jun 25  
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File 587:Jane`s Defense&Aerospace 2009/May W4  
(c) 2009 Jane`s Information Group  
File 619:Asia Intelligence Wire 1995-2009/Jun 25  
(c) 2009 Fin. Times Ltd  
File 484:PERIODICAL ABS PLUSTEXT 1986-2009/JUN W3  
(c) 2009 PROQUEST

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Set	Items	Description
S1	36313	(INCOMING OR INWARD? ? OR INBOUND OR ENTER? OR INGOING OR ARRIV?)(3N)(FLUID? ? OR WATER OR LIQUID? ? OR COOL?NT? ? OR ETHYLENE()GLYCOL? ? OR ETHYLENEGLYCOL? ? OR ENTHANEDIOL? ? OR ANTI()FREEZE? ? OR ANTIFREEZE? ?)
----LIMITALL S1----		
S2	6607	TEMPERATURE? ?
S3	5463	DEGREE OR DEGREES
S4	9565	AIR OR AIRS
S5	302	S2()DIFFERENC?
S6	221	S5 AND S4 AND S1
S7	1464	(S4 OR GAS OR GASES)(3N)(LEADING OR DISCHARG? OR SUPPLY OR OUTGOING OR OUTLET? OR OUTWARD? ? OR OUTBOUND OR EXITING OR LEAVING OR LEAVE OR LEAVES OR LEFT OR (FLOW? ? OR FLOWED OR FLOWING OR GOING OR GO OR GOES OR WENT)() (OUT))
S8	263	S7(S)S1
S9	2	S8(S)S5
S10	2	RD (unique items)
S11	115	S7(7N)S1
S12	21	S7(7N)(DIFFEREN? OR VARIANCE? ? OR SUBTRACT? OR DEDUCT? OR DEVIA?)
S13	21	S12 AND S1

S14 20 S13 NOT S9  
 S15 7 S14/2005:2009  
 S16 13 S14 NOT S15  
 S17 13 RD (unique items)  
 S18 321 S1(7N)(DIFFEREN? OR VARIANCE? ? OR SUBTRACT? OR DEDUCT?  
 OR DEVIA?)  
 S19 29 S18 AND S7  
 S20 22 S19 NOT (S13 OR S9)  
 S21 3 S20/2005:2009  
 S22 19 S20 NOT S21  
 S23 17 RD (unique items)  
 S24 28 S11(7N)(S2 OR S3 OR COOL? OR COLD? OR HOT OR HEAT OR  
 WARMTH OR HOTNESS OR FAHRENHEIT OR CELSIUS OR KELVIN)  
 S25 26 S24 NOT (S19 OR S13 OR S9)  
 S26 7 S25/2005:2009  
 S27 19 S25 NOT S26  
 S28 17 RD (unique items)  
 S29 7317 (FLUID? ? OR WATER OR LIQUID? ? OR COOL?NT? ? OR  
 ETHYLENE()GLYCOL? ? OR ETHYLENEGLYCOL? ? OR ENTHANEDIOL? ? OR  
 ANTI()FREEZE? ? OR ANTIFREEZE? ? OR REFRIGER?NT? ?)(5N)(REGULAT? OR  
 CONTROL? OR MODULAT? OR ADJUST? OR CHANG? OR ADAPT? OR MODIF? OR  
 CALIBRAT? OR READJUST? OR READAPT? OR RECALIBRAT??? OR ALTER??? OR  
 ALTERATION? OR VARY??? OR VARI?)  
 S30 29 S8(S)S29  
 S31 26 S30 NOT (S24 OR S19 OR S13 OR S9)  
 S32 10 S31/2005:2009  
 S33 16 S31 NOT S32  
 S34 14 RD (unique items)

? log off

10/3,K/1 (Item 1 from file: 148)  
 DIALOG(R)File 148: Gale Group Trade &  
 Industry DB  
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09079060

**Supplier Number:** 18733802 (USE  
 FORMAT 7 OR 9 FOR FULL TEXT )  
**'Dirty socks,' airflow, etc.:**  
**training is crucial for success. (heating, ventilation and**  
**air conditioning**  
**installation)**

Hollembeak, Robert

Air Conditioning, Heating & Refrigeration News  
 , v199 , n4 , p30(2)  
 Sep 23 , 1996  
 ISSN:

0002-2276

**Language:** English

**Record Type:** Fulltext;

Abstract

**Word Count:** 1476

**Line Count:** 00133

...Air-cooled condenser approach - The amount of temperature difference of condenser saturated temperature above the **entering** air temperature.

**Water** chiller approach - The amount of **temperature difference** of chiller saturated temperature below the **leaving** water temperature.

**Air** over evaporator coil approach - The amount of **temperature difference** of coil saturated temperature and entering air wetbulb.

Note: If your refrigerant has glide, the...

17/3,K/5 (Item 2 from file: 148)

DIALOG(R)File 148: Gale Group Trade & Industry DB

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15770535 **Supplier Number:** 97115249 (USE FORMAT 7 OR 9 FOR FULL TEXT )  
**Central chiller plant for agricultural campus: from feasibility study to the commissioning process, how a central chilled-water system came to exceed the expectations of The Ohio State University.**

MacMillan, James G.; Wessel, Dennis J.

Heating/Piping/Air Conditioning Engineering , 74 , 11 , 44(8)

Nov , 2002

ISSN: 1527-4055

**Language:** English

**Record Type:** Fulltext

**Word Count:** 3523 **Line Count:** 00298

...chiller's 20 F with the same approach temperature).

(Temperature range

is the difference between **entering-** and leaving-**water** temperature, while approach temperature is the **difference** between

**leaving-water** and **entering-air** temperature.)

The use of the oversized cooling tower results in a return-water temperature of...

23/3,K/8 (Item 4 from file: 148)  
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08982527   **Supplier Number:** 18660328 (USE FORMAT 7 OR 9 FOR FULL TEXT )  
**Free cooling considerations. (includes related article on heat exchangers)**

Kelly, David W.  
Heating, Piping, Air Conditioning , v68 , n8 , p51(6)  
August , 1996  
ISSN: 0017-940X

**Language:** English

**Record Type:** Fulltext

**Word Count:** 3586   **Line Count:** 00276

...second limitation is the approach temperature of the heat exchanger. The approach temperature is the **difference** between the temperatures of the **entering water** on the cold side of the HX (tower side) and the leaving chilled water on...

...is 75 F DB/56.7 F WB (30 percent maximum winter relative humidity). The

**leaving air** temperature (LAT) for the AHUs is 55 F. This requires the cooling coils to deliver...

...glass exposure).

As the table shows, the warmer free cooling chilled water can cool the

**supply air** to the same temperature as summer operation.

This

is due to the reduced winter cooling...applications. These are capable of a

2 to 3 F approach temperature, which is the **difference** between the

**entering water** temperature on the cold side of the unit (tower water) and the leaving temperature on...

28/3,K/9 (Item 4 from file: 148)  
DIALOG(R)File 148: Gale Group Trade & Industry DB  
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06202640   **Supplier Number:** 13539782 (USE FORMAT 7 OR 9 FOR FULL TEXT )  
**Common sense cooling coils. (an economical design of a chilled water system)**

Tamblyn, Robert T.  
Heating, Piping, Air Conditioning , v64 , n12 , p49(7)  
Dec , 1992

ISSN: 0017-940X

**Language:** ENGLISH

**Record Type:** FULLTEXT

**Word Count:** 2843 **Line Count:** 00212

...optimum selections if certain conditions are specified. These include the air volume, the entering and **leaving air** conditions, the **air** velocity, the **entering water temperature**, and the chilled water range.

Table 1 shows program output for one manufacturer for a...

...accomplish 42.5 tons of cooling on 10,000 cfm. The study assumes 38 F

**entering water** and 45 F **leaving air**. Low-**temperature air** was used as a base because its popularity is rising and because it enforced a...27 F, as shown in Figs. 9 and 10.

The selection of inlet water and **outlet air temperatures** may seem unusual since 42 F **entering water** and 55 F **leaving air** are more likely to comply with industry convention. However, this article is attempting to influence ...

28/3,K/12 (Item 7 from file: 148)

DIALOG(R)File 148: Gale Group Trade & Industry DB

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04161185 **Supplier Number:** 08302185 (USE FORMAT 7 OR 9 FOR FULL TEXT )  
**Calculating heating and cooling coil performance.**

Shah, M. Mohammed

Heating, Piping, Air Conditioning , v61 , n12 , p73(2)

Dec , 1989

ISSN: 0017-940X

**Language:** ENGLISH

**Record Type:** FULLTEXT

**Word Count:** 936 **Line Count:** 00075

...fan-coil unit was purchased with the following performance rating by the supplier:

\* Entering air **temperature** = 95 F DB/75 F WB

\* **Entering chilled-water temperature** = 55 F

- \* **Leaving air temperature** = 66 F DB/58 F WB
- \* Chilled-water flow = 243 gpm
- \* Air flow rate = 20...

...rates balanced to the above-listed values. The following measurements

were then taken:

- \* Entering air **temperature** = 90 F DB/73 F WB
- \* **Entering chilled-water temperature** = 52 F
- \* **Leaving air temperature** = 63 F DB/56 F WB

Is the coil's performance better than or inferior...

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Set	Items	Description
S1	0	(REFRIGER?NT? ? AND ETHANEDIOL) (3N) (INCOMING OR INWARD? ? OR INBOUND OR ENTER? OR INGOING OR ARRIV?)

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